

ABSTRACT

ANTI-PARALLEL COUPLED FREE LAYER FOR A GMR SENSOR FOR A MAGNETIC HEAD

A magnetic head including a GMR read head structure in which the outer end portions of
5 the free magnetic layer are magnetically stabilized. The stabilization is achieved by the
fabrication of thin film layers on top of the outer end portions that have an anti-parallel coupled
magnetic field structure. A seed layer having a BCC crystal structure is deposited before a first
magnetic field layer to increase coercivity of the anti-parallel coupled structure. The thickness of
the layers is selected to produce a high coercivity structure having a net magnetization in the
10 same direction as the magnetic field of the free magnetic layer. The anti-parallel coupled
structure preferably includes a CoFeCr seed layer, a CoPtCr first magnetic layer, an Ru
nonmagnetic layer and a CoPtCr second magnetic layer. An enhanced structure includes two
CoFe layers formed below and above the Ru layer.